

SEQUENCE LISTING

<110> Matti Sallberg

<120> A HEPATITIS C VIRUS NON-STRUCTURAL
NS3/4A FUSION GENE

<130> TRIPEP.028AUS

<150> 60/225,767

<151> 2000-08-17

<150> 60/229,175

<151> 2000-08-29

<150> 09/705,547

<151> 2000-11-03

<160> 34

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 2061

<212> DNA

<213> Artificial Sequence

<220>

<223> Hepatitis C virus NS3/4A coding region

<400> 1

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gccagactt tcttggcaac ctgcattaac ggggtgtgtt ggactgtcta ccatggagcc 180
ggaacaagga ccattgcgtc acctaagggt cctgttatcc agatgtacac caatgtggac 240
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gccacactgc atgctccac cggcagcggg aagagcacca aggtcccggc cgcatacgca 660
gctcagggct acaagggtgt ggtgctcaac ccctccgttg ctgcaacaat gggctttggg 720
gcttacatgt ccaaggccca tgggattgat cctaaccatc ggactggggg gaggacaatt 780
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atcttgggca ttggcactgt ccttgacca gacagagacc cgggggagag actgactgtg 960
ctcgccaccg ctaccctcc gggctccgtc actgtgcccc atoctaacat cgaggagggt 1020
gctctgtcca ctaccggaga gatcccttt tatggcaagg ctattccct tgaagcaatt 1080
aaggggggga gacatctcat cttctgccac tcaaagaaga agtgcgacga gctcgccgca 1140
aaactggctc cgttgggcgt caatgccgtg gcttactacc gcggccttga tgtgtccgtc 1200
atccccacca gtgggtgacg tgctgctgtg gcaactgacg cctcatgac cggctttacc 1260
ggcgacttcg attcgggtg agactgcaac acgtgtgtca cccagacagt cgacttcagc 1320
cttgacccta ccttcacat tgagacaatc acgcttcccc aggatgctgt cccccgtact 1380

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caacgtcggg gtaggactgg cagaggggaag ccaggcatct acagatttgt ggcaccgggg 1440
gagcgtcctt ctggcatgtt tgactcgtct gtcctctgcg agtgctatga cgcgggttgt 1500
gcttggtatg agcttacgcc cgccgagacc acagttaggc tacgagcata catgaacacc 1560
ccgggacttc ccgtgtgcc aagaccatctt gaattttggg agggcgtctt tacgggtctc 1620
acccacatag acgcccactt cctatcccag acaaagcaga gtggggaaaaa ccttccttat 1680
ctggtagcgt accaagccac cgtgtgcgct agagctcaag cccctcccc gtcgtgggac 1740
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<210> 2

<211> 686

<212> PRT

<213> Artificial Sequence

<220>

<223> Hepatitis C virus NS3/4A peptide

<400> 2

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Met Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
 1           5           10           15
Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
          20           25           30
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
          35           40           45
Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
          50           55           60
Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
65           70           75           80
Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ala Arg Ser Leu Thr
          85           90           95
Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
          100          105          110
Asp Val Ile Pro Val Arg Arg Arg Gly Asp Gly Arg Gly Ser Leu Leu
          115          120          125
Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
          130          135          140
Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
145          150          155          160
Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu
          165          170          175
Glu Thr Thr Met Arg Ser Pro Val Phe Ser Asp Asn Ser Ser Pro Pro
          180          185          190
Ala Val Pro Gln Ser Tyr Gln Val Ala His Leu His Ala Pro Thr Gly
          195          200          205
Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr
          210          215          220
Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Met Gly Phe Gly
225          230          235          240
Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly
          245          250          255
Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly

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<210> 3
 <211> 686
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant Hepatitis C virus NS3/4A

<400> 3
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 1 5 10 15
 Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
 20 25 30
 Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
 35 40 45
 Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
 50 55 60
 Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
 65 70 75 80
 Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ala Arg Ser Leu Thr
 85 90 95
 Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
 100 105 110
 Asp Val Ile Pro Val Arg Arg Arg Gly Asp Gly Arg Gly Ser Leu Leu
 115 120 125
 Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
 130 135 140
 Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
 145 150 155 160
 Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu
 165 170 175
 Glu Thr Thr Met Arg Ser Pro Val Phe Ser Asp Asn Ser Ser Pro Pro
 180 185 190
 Ala Val Pro Gln Ser Tyr Gln Val Ala His Leu His Ala Pro Thr Gly
 195 200 205
 Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr
 210 215 220
 Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Met Gly Phe Gly
 225 230 235 240
 Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly
 245 250 255
 Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly
 260 265 270
 Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile
 275 280 285
 Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile
 290 295 300
 Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Thr Val
 305 310 315 320
 Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn
 325 330 335
 Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly
 340 345 350
 Lys Ala Ile Pro Leu Glu Ala Ile Lys Gly Gly Arg His Leu Ile Phe
 355 360 365

Cys	His	Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala
370						375					380				
Leu	Gly	Val	Asn	Ala	Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val
385					390					395					400
Ile	Pro	Thr	Ser	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met
				405					410					415	
Thr	Gly	Phe	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys
			420				425						430		
Val	Thr	Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu
	435						440					445			
Thr	Ile	Thr	Leu	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly
	450					455					460				
Arg	Thr	Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly
465					470					475					480
Glu	Arg	Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr
				485					490					495	
Asp	Ala	Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val
			500					505					510		
Arg	Leu	Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp
	515						520					525			
His	Leu	Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp
	530					535					540				
Ala	His	Phe	Leu	Ser	Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr
545					550					555					560
Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro
				565					570					575	
Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr
			580					585					590		
Leu	His	Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn
	595						600					605			
Glu	Val	Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met
	610					615					620				
Ser	Ala	Asp	Leu	Glu	Val	Val	Thr	Gly	Thr	Trp	Val	Leu	Val	Gly	Gly
625					630					635					640
Val	Leu	Ala	Ala	Leu	Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val
				645					650					655	
Ile	Val	Gly	Arg	Ile	Val	Leu	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp
		660						665					670		
Arg	Glu	Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys		
	675						680					685			

<210> 4

<211> 686

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A

<400> 4

Met	Ala	Pro	Ile	Thr	Ala	Tyr	Ala	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly
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Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly
			20				25					30			

Glu	Val	Gln	Ile	Val	Ser	Thr	Ala	Ala	Gln	Thr	Phe	Leu	Ala	Thr	Cys
		35					40					45			
Ile	Asn	Gly	Val	Cys	Trp	Thr	Val	Tyr	His	Gly	Ala	Gly	Thr	Arg	Thr
	50					55				60					
Ile	Ala	Ser	Pro	Lys	Gly	Pro	Val	Ile	Gln	Met	Tyr	Thr	Asn	Val	Asp
65					70					75					80
Gln	Asp	Leu	Val	Gly	Trp	Pro	Ala	Pro	Gln	Gly	Ala	Arg	Ser	Leu	Thr
				85					90					95	
Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala
			100				105					110			
Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	Gly	Asp	Gly	Arg	Gly	Ser	Leu	Leu
		115					120					125			
Ser	Pro	Arg	Pro	Ile	Ser	Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu
	130					135					140				
Leu	Cys	Pro	Ala	Gly	His	Ala	Val	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys
145					150					155					160
Thr	Arg	Gly	Val	Ala	Lys	Ala	Val	Asp	Phe	Ile	Pro	Val	Glu	Ser	Leu
				165					170					175	
Glu	Thr	Thr	Met	Arg	Ser	Pro	Val	Phe	Ser	Asp	Asn	Ser	Ser	Pro	Pro
			180					185					190		
Ala	Val	Pro	Gln	Ser	Tyr	Gln	Val	Ala	His	Leu	His	Ala	Pro	Thr	Gly
		195					200					205			
Ser	Gly	Lys	Ser	Thr	Lys	Val	Pro	Ala	Ala	Tyr	Ala	Ala	Gln	Gly	Tyr
	210					215					220				
Lys	Val	Leu	Val	Leu	Asn	Pro	Ser	Val	Ala	Ala	Thr	Met	Gly	Phe	Gly
225					230					235					240
Ala	Tyr	Met	Ser	Lys	Ala	His	Gly	Ile	Asp	Pro	Asn	Ile	Arg	Thr	Gly
				245					250					255	
Val	Arg	Thr	Ile	Thr	Thr	Gly	Ser	Pro	Ile	Thr	Tyr	Ser	Thr	Tyr	Gly
			260					265					270		
Lys	Phe	Leu	Ala	Asp	Gly	Gly	Cys	Ser	Gly	Gly	Ala	Tyr	Asp	Ile	Ile
		275					280					285			
Ile	Cys	Asp	Glu	Cys	His	Ser	Thr	Asp	Ala	Thr	Ser	Ile	Leu	Gly	Ile
	290					295					300				
Gly	Thr	Val	Leu	Asp	Gln	Ala	Glu	Thr	Ala	Gly	Ala	Arg	Leu	Thr	Val
305					310					315					320
Leu	Ala	Thr	Ala	Thr	Pro	Pro	Gly	Ser	Val	Thr	Val	Pro	His	Pro	Asn
				325					330					335	
Ile	Glu	Glu	Val	Ala	Leu	Ser	Thr	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly
			340					345					350		
Lys	Ala	Ile	Pro	Leu	Glu	Ala	Ile	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe
		355					360					365			
Cys	His	Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala
	370					375					380				
Leu	Gly	Val	Asn	Ala	Val	Ala</									

465 470 475 480
 Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr
 485 490 495
 Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val
 500 505 510
 Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp
 515 520 525
 His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp
 530 535 540
 Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr
 545 550 555 560
 Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro
 565 570 575
 Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr
 580 585 590
 Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn
 595 600 605
 Glu Val Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met
 610 615 620
 Ser Ala Asp Leu Glu Val Val Arg Gly Thr Trp Val Leu Val Gly Gly
 625 630 635 640
 Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val
 645 650 655
 Ile Val Gly Arg Ile Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp
 660 665 670
 Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys
 675 680 685

<210> 5

<211> 686

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A

<400> 5

Met Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
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 Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
 20 25 30
 Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
 35 40 45
 Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
 50 55 60
 Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
 65 70 75 80
 Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ala Arg Ser Leu Thr
 85 90 95
 Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
 100 105 110
 Asp Val Ile Pro Val Arg Arg Arg Gly Asp Gly Arg Gly Ser Leu Leu
 115 120 125
 Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu

130		135		140
Leu Cys Pro Ala Gly His	Ala Val Gly Ile Phe Arg Ala Ala Val Cys			
145		150		155
Thr Arg Gly Val Ala Lys	Ala Val Asp Phe Ile Pro Val Glu Ser Leu			160
	165		170	175
Glu Thr Thr Met Arg Ser	Pro Val Phe Ser Asp Asn Ser Ser Pro Pro			
	180		185	190
Ala Val Pro Gln Ser Tyr	Gln Val Ala His Leu His Ala Pro Thr Gly			
	195		200	205
Ser Gly Lys Ser Thr Lys	Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr			
	210		215	220
Lys Val Leu Val Leu Asn	Pro Ser Val Ala Ala Thr Met Gly Phe Gly			
225		230		235
Ala Tyr Met Ser Lys Ala	His Gly Ile Asp Pro Asn Ile Arg Thr Gly			240
	245		250	255
Val Arg Thr Ile Thr Thr	Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly			
	260		265	270
Lys Phe Leu Ala Asp Gly	Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile			
	275		280	285
Ile Cys Asp Glu Cys His	Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile			
	290		295	300
Gly Thr Val Leu Asp Gln	Ala Glu Thr Ala Gly Ala Arg Leu Thr Val			
305		310		315
Leu Ala Thr Ala Thr Pro	Pro Gly Ser Val Thr Val Pro His Pro Asn			
	325		330	335
Ile Glu Glu Val Ala Leu	Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly			
	340		345	350
Lys Ala Ile Pro Leu Glu	Ala Ile Lys Gly Gly Arg His Leu Ile Phe			
	355		360	365
Cys His Ser Lys Lys Lys	Cys Asp Glu Leu Ala Ala Lys Leu Val Ala			
	370		375	380
Leu Gly Val Asn Ala Val	Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val			
385		390		395
Ile Pro Thr Ser Gly Asp	Val Val Val Val Ala Thr Asp Ala Leu Met			
	405		410	415
Thr Gly Phe Thr Gly Asp	Phe Asp Ser Val Ile Asp Cys Asn Thr Cys			
	420		425	430
Val Thr Gln Thr Val Asp	Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu			
	435		440	445
Thr Ile Thr Leu Pro Gln	Asp Ala Val Ser Arg Thr Gln Arg Arg Gly			
	450		455	460
Arg Thr Gly Arg Gly Lys	Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly			
465		470		475
Glu Arg Pro Ser Gly Met	Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr			
	485		490	495
Asp Ala Gly Cys Ala Trp	Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val			
	500		505	510
Arg Leu Arg Ala Tyr Met	Asn Thr Pro Gly Leu Pro Val Cys Gln Asp			
	515		520	525
His Leu Glu Phe Trp Glu	Gly Val Phe Thr Gly Leu Thr His Ile Asp			
	530		535	540
Ala His Phe Leu Ser Gln	Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr			
545		550		555
Leu Val Ala Tyr Gln Ala	Thr Val Cys Ala Arg Ala Gln Ala Pro Pro			
	565		570	575

Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr
580 585 590
Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn
595 600 605
Glu Val Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met
610 615 620
Ser Ala Asp Leu Glu Val Val Thr Pro Thr Trp Val Leu Val Gly Gly
625 630 635 640
Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val
645 650 655
Ile Val Gly Arg Ile Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp
660 665 670
Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys
675 680 685

<210> 6

<211> 686

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A

<400> 6

Met Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
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Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
20 25 30
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
35 40 45
Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
50 55 60
Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
65 70 75 80
Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ala Arg Ser Leu Thr
85 90 95
Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
100 105 110
Asp Val Ile Pro Val Arg Arg Arg Gly Asp Gly Arg Gly Ser Leu Leu
115 120 125
Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
130 135 140
Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
145 150 155 160
Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu
165 170 175
Glu Thr Thr Met Arg Ser Pro Val Phe Ser Asp Asn Ser Ser Pro Pro
180 185 190
Ala Val Pro Gln Ser Tyr Gln Val Ala His Leu His Ala Pro Thr Gly
195 200 205
Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr
210 215 220
Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Met Gly Phe Gly
225 230 235 240

Ala	Tyr	Met	Ser	Lys	Ala	His	Gly	Ile	Asp	Pro	Asn	Ile	Arg	Thr	Gly	
				245					250					255		
Val	Arg	Thr	Ile	Thr	Thr	Gly	Ser	Pro	Ile	Thr	Tyr	Ser	Thr	Tyr	Gly	
			260					265					270			
Lys	Phe	Leu	Ala	Asp	Gly	Gly	Cys	Ser	Gly	Gly	Ala	Tyr	Asp	Ile	Ile	
		275					280					285				
Ile	Cys	Asp	Glu	Cys	His	Ser	Thr	Asp	Ala	Thr	Ser	Ile	Leu	Gly	Ile	
	290					295					300					
Gly	Thr	Val	Leu	Asp	Gln	Ala	Glu	Thr	Ala	Gly	Ala	Arg	Leu	Thr	Val	
305					310					315					320	
Leu	Ala	Thr	Ala	Thr	Pro	Pro	Gly	Ser	Val	Thr	Val	Pro	His	Pro	Asn	
				325					330					335		
Ile	Glu	Glu	Val	Ala	Leu	Ser	Thr	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	
			340					345					350			
Lys	Ala	Ile	Pro	Leu	Glu	Ala	Ile	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe	
		355					360					365				
Cys	His	Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala	
	370					375					380					
Leu	Gly	Val	Asn	Ala	Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	
385					390					395					400	
Ile	Pro	Thr	Ser	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	
				405					410					415		
Thr	Gly	Phe	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	
			420					425					430			
Val	Thr	Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	
		435					440					445				
Thr	Ile	Thr	Leu	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	
	450				455						460					
Arg	Thr	Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	
465					470					475					480	
Glu	Arg	Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	
				485					490					495		
Asp	Ala	Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	
			500					505					510			
Arg	Leu	Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	
		515					520					525				
His	Leu	Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	
	530					535					540					
Ala	His	Phe	Leu	Ser	Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr	
545					550					555					560	
Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro	
				565					570					575		
Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr	
			580					585					590			
Leu	His	Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn	
		595					600					605				
Glu	Val	Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met	
	610				615						620					
Ser	Ala	Asp	Leu	Glu	Val	Val	Arg	Pro	Thr	Trp	Val	Leu	Val	Gly	Gly	
625					630					635					640	
Val	Leu	Ala	Ala	Leu	Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val	
				645					650					655		
Ile	Val	Gly	Arg	Ile	Val	Leu	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp	
			660					665					670			
Arg	Glu	Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys			

<210> 7

<211> 686

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A

<400> 7

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Met Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
 1           5           10           15
Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
      20           25           30
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
      35           40           45
Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
      50           55           60
Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
65           70           75           80
Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ala Arg Ser Leu Thr
      85           90           95
Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
      100          105          110
Asp Val Ile Pro Val Arg Arg Arg Gly Asp Gly Arg Gly Ser Leu Leu
      115          120          125
Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
      130          135          140
Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
145          150          155          160
Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu
      165          170          175
Glu Thr Thr Met Arg Ser Pro Val Phe Ser Asp Asn Ser Ser Pro Pro
      180          185          190
Ala Val Pro Gln Ser Tyr Gln Val Ala His Leu His Ala Pro Thr Gly
      195          200          205
Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr
      210          215          220
Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Met Gly Phe Gly
225          230          235          240
Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly
      245          250          255
Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly
      260          265          270
Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile
      275          280          285
Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile
      290          295          300
Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Thr Val
305          310          315          320
Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn
      325          330          335
Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly

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1	5	10	15
Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly			
	20	25	30
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys			
	35	40	45
Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr			
	50	55	60
Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp			
65	70	75	80
Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ala Arg Ser Leu Thr			
	85	90	95
Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala			
	100	105	110
Asp Val Ile Pro Val Arg Arg Arg Gly Asp Gly Arg Gly Ser Leu Leu			
	115	120	125
Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu			
	130	135	140
Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys			
145	150	155	160
Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu			
	165	170	175
Glu Thr Thr Met Arg Ser Pro Val Phe Ser Asp Asn Ser Ser Pro Pro			
	180	185	190
Ala Val Pro Gln Ser Tyr Gln Val Ala His Leu His Ala Pro Thr Gly			
	195	200	205
Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr			
	210	215	220
Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Met Gly Phe Gly			
225	230	235	240
Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly			
	245	250	255
Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly			
	260	265	270
Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile			
	275	280	285
Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile			
	290	295	300
Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Thr Val			
305	310	315	320
Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn			
	325	330	335
Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly			
	340	345	350
Lys Ala Ile Pro Leu Glu Ala Ile Lys Gly Gly Arg His Leu Ile Phe			
	355	360	365
Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala			
	370	375	380
Leu Gly Val Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val			
385	390	395	400
Ile Pro Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met			
	405	410	415
Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys			
	420	425	430
Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu			
	435	440	445

Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly
 450 455 460
 Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly
 465 470 475 480
 Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr
 485 490 495
 Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val
 500 505 510
 Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp
 515 520 525
 His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp
 530 535 540
 Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr
 545 550 555 560
 Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro
 565 570 575
 Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr
 580 585 590
 Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn
 595 600 605
 Glu Val Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met
 610 615 620
 Ser Ala Asp Leu Glu Val Val Cys Ser Thr Trp Val Leu Val Gly Gly
 625 630 635 640
 Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val
 645 650 655
 Ile Val Gly Arg Ile Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp
 660 665 670
 Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys
 675 680 685

<210> 9

<211> 686

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A

<400> 9

Met Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
 1 5 10 15
 Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
 20 25 30
 Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
 35 40 45
 Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
 50 55 60
 Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
 65 70 75 80
 Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ala Arg Ser Leu Thr
 85 90 95
 Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
 100 105 110

Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	Gly	Asp	Gly	Arg	Gly	Ser	Leu	Leu	115	120	125
Ser	Pro	Arg	Pro	Ile	Ser	Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	130	135	140
Leu	Cys	Pro	Ala	Gly	His	Ala	Val	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	145	150	155
Thr	Arg	Gly	Val	Ala	Lys	Ala	Val	Asp	Phe	Ile	Pro	Val	Glu	Ser	Leu	165	170	175
Glu	Thr	Thr	Met	Arg	Ser	Pro	Val	Phe	Ser	Asp	Asn	Ser	Ser	Pro	Pro	180	185	190
Ala	Val	Pro	Gln	Ser	Tyr	Gln	Val	Ala	His	Leu	His	Ala	Pro	Thr	Gly	195	200	205
Ser	Gly	Lys	Ser	Thr	Lys	Val	Pro	Ala	Ala	Tyr	Ala	Ala	Gln	Gly	Tyr	210	215	220
Lys	Val	Leu	Val	Leu	Asn	Pro	Ser	Val	Ala	Ala	Thr	Met	Gly	Phe	Gly	225	230	235
Ala	Tyr	Met	Ser	Lys	Ala	His	Gly	Ile	Asp	Pro	Asn	Ile	Arg	Thr	Gly	245	250	255
Val	Arg	Thr	Ile	Thr	Thr	Gly	Ser	Pro	Ile	Thr	Tyr	Ser	Thr	Tyr	Gly	260	265	270
Lys	Phe	Leu	Ala	Asp	Gly	Gly	Cys	Ser	Gly	Gly	Ala	Tyr	Asp	Ile	Ile	275	280	285
Ile	Cys	Asp	Glu	Cys	His	Ser	Thr	Asp	Ala	Thr	Ser	Ile	Leu	Gly	Ile	290	295	300
Gly	Thr	Val	Leu	Asp	Gln	Ala	Glu	Thr	Ala	Gly	Ala	Arg	Leu	Thr	Val	305	310	315
Leu	Ala	Thr	Ala	Thr	Pro	Pro	Gly	Ser	Val	Thr	Val	Pro	His	Pro	Asn	325	330	335
Ile	Glu	Glu	Val	Ala	Leu	Ser	Thr	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	340	345	350
Lys	Ala	Ile	Pro	Leu	Glu	Ala	Ile	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe	355	360	365
Cys	His	Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala	370	375	380
Leu	Gly	Val	Asn	Ala	Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	385	390	395
Ile	Pro	Thr	Ser	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	405	410	415
Thr	Gly	Phe	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Cys	420	425	430
Val	Thr	Gln	Thr	Val	Asp	Phe	Ser	Leu	Asp	Pro	Thr	Phe	Thr	Ile	Glu	435	440	445
Thr	Ile	Thr	Leu	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	450	455	460
Arg	Thr	Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	465	470	475
Glu	Arg	Pro	Ser	Gly	Met	Phe	Asp	Ser	Ser	Val	Leu	Cys	Glu	Cys	Tyr	485	490	495
Asp	Ala	Gly	Cys	Ala	Trp	Tyr	Glu	Leu	Thr	Pro	Ala	Glu	Thr	Thr	Val	500	505	510
Arg	Leu	Arg	Ala	Tyr	Met	Asn	Thr	Pro	Gly	Leu	Pro	Val	Cys	Gln	Asp	515	520	525
His	Leu	Glu	Phe	Trp	Glu	Gly	Val	Phe	Thr	Gly	Leu	Thr	His	Ile	Asp	530	535	540
Ala	His	Phe	Leu	Ser	Gln	Thr	Lys	Gln	Ser	Gly	Glu	Asn	Leu	Pro	Tyr			

545		550		555		560									
Leu	Val	Ala	Tyr	Gln	Ala	Thr	Val	Cys	Ala	Arg	Ala	Gln	Ala	Pro	Pro
		565		570		575									
Pro	Ser	Trp	Asp	Gln	Met	Trp	Lys	Cys	Leu	Ile	Arg	Leu	Lys	Pro	Thr
		580		585		590									
Leu	His	Gly	Pro	Thr	Pro	Leu	Leu	Tyr	Arg	Leu	Gly	Ala	Val	Gln	Asn
		595		600		605									
Glu	Val	Thr	Leu	Thr	His	Pro	Val	Thr	Lys	Tyr	Ile	Met	Thr	Cys	Met
		610		615		620									
Ser	Ala	Asp	Leu	Glu	Val	Cys	Cys	Ser	Thr	Trp	Val	Leu	Val	Gly	Gly
		625		630		635									
Val	Leu	Ala	Ala	Leu	Ala	Ala	Tyr	Cys	Leu	Ser	Thr	Gly	Cys	Val	Val
		645		650		655									
Ile	Val	Gly	Arg	Ile	Val	Leu	Ser	Gly	Lys	Pro	Ala	Ile	Ile	Pro	Asp
		660		665		670									
Arg	Glu	Val	Leu	Tyr	Arg	Glu	Phe	Asp	Glu	Met	Glu	Glu	Cys		
		675		680		685									

<210> 10

<211> 686

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A

<400> 10

Met	Ala	Pro	Ile	Thr	Ala	Tyr	Ala	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly
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Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly
			20					25				30			
Glu	Val	Gln	Ile	Val	Ser	Thr	Ala	Ala	Gln	Thr	Phe	Leu	Ala	Thr	Cys
		35					40				45				
Ile	Asn	Gly	Val	Cys	Trp	Thr	Val	Tyr	His	Gly	Ala	Gly	Thr	Arg	Thr
	50					55				60					
Ile	Ala	Ser	Pro	Lys	Gly	Pro	Val	Ile	Gln	Met	Tyr	Thr	Asn	Val	Asp
	65				70				75					80	
Gln	Asp	Leu	Val	Gly	Trp	Pro	Ala	Pro	Gln	Gly	Ala	Arg	Ser	Leu	Thr
			85					90					95		
Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala
			100					105					110		
Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	Gly	Asp	Gly	Arg	Gly	Ser	Leu	Leu
		115					120					125			
Ser	Pro	Arg	Pro	Ile	Ser	Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu
		130				135					140				
Leu	Cys	Pro	Ala	Gly	His	Ala	Val	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys
	145				150					155				160	
Thr	Arg	Gly	Val	Ala	Lys	Ala	Val	Asp	Phe	Ile	Pro	Val	Glu	Ser	Leu
			165					170					175		
Glu	Thr	Thr	Met	Arg	Ser	Pro	Val	Phe	Ser	Asp	Asn	Ser	Ser	Pro	Pro
			180					185					190		
Ala	Val	Pro	Gln	Ser	Tyr	Gln	Val	Ala	His	Leu	His	Ala	Pro	Thr	Gly
		195				200						205			
Ser	Gly	Lys	Ser	Thr	Lys	Val	Pro	Ala	Ala	Tyr	Ala	Ala	Gln	Gly	Tyr

210	215	220
Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Met Gly Phe Gly		
225	230	235
Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly		240
	245	250
Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly		255
	260	265
Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile		270
	275	280
Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile		285
	290	295
Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Thr Val		300
305	310	315
Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn		320
	325	330
Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly		335
	340	345
Lys Ala Ile Pro Leu Glu Ala Ile Lys Gly Gly Arg His Leu Ile Phe		350
	355	360
Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala		365
	370	375
Leu Gly Val Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val		380
385	390	395
Ile Pro Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met		400
	405	410
Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys		415
	420	425
Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu		430
	435	440
Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly		445
	450	455
Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly		460
465	470	475
Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr		480
	485	490
Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val		495
	500	505
Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp		510
	515	520
His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp		525
	530	535
Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr		540
545	550	555
Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro		560
	565	570
Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr		575
	580	585
Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn		590
	595	600
Glu Val Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met		605
	610	615
Ser Ala Asp Leu Glu Val Ser Ser Ser Thr Trp Val Leu Val Gly Gly		620
625	630	635
Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val		640
	645	650
		655

Ile Val Gly Arg Ile Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp
660 665 670
Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys
675 680 685

<210> 11
<211> 686
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant Hepatitis C virus NS3/4A

<400> 11
Met Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
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Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
20 25 30
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
35 40 45
Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
50 55 60
Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp
65 70 75 80
Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ala Arg Ser Leu Thr
85 90 95
Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
100 105 110
Asp Val Ile Pro Val Arg Arg Arg Gly Asp Gly Arg Gly Ser Leu Leu
115 120 125
Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
130 135 140
Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
145 150 155 160
Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Leu
165 170 175
Glu Thr Thr Met Arg Ser Pro Val Phe Ser Asp Asn Ser Ser Pro Pro
180 185 190
Ala Val Pro Gln Ser Tyr Gln Val Ala His Leu His Ala Pro Thr Gly
195 200 205
Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr
210 215 220
Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Met Gly Phe Gly
225 230 235 240
Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly
245 250 255
Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly
260 265 270
Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile
275 280 285
Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile
290 295 300
Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Thr Val
305 310 315 320

<400> 14
 Thr Lys Tyr Met Thr Cys Met Ser Ala Asp Leu Glu Val Val Thr Ser
 1 5 10 15
 Thr Trp Val Leu Val Gly Gly Val Leu
 20 25

<210> 15
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Hepatitis C virus NS3/4A peptide

<400> 15
 Ser Ala Asp Leu Glu Val Val Thr Ser Thr Trp Val
 1 5 10

<210> 16
 <211> 25
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant Hepatitis C virus NS3/4A peptide

<400> 16
 Thr Lys Tyr Met Thr Cys Met Ser Ala Asp Leu Glu Val Val Thr Gly
 1 5 10 15
 Thr Trp Val Leu Val Gly Gly Val Leu
 20 25

<210> 17
 <211> 25
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mutant Hepatitis C virus NS3/4A peptide

<400> 17
 Thr Lys Tyr Met Thr Cys Met Ser Ala Asp Leu Glu Val Val Arg Gly
 1 5 10 15
 Thr Trp Val Leu Val Gly Gly Val Leu
 20 25

<210> 18
 <211> 25
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A peptide

<400> 18

Thr	Lys	Tyr	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	Thr	Pro
1				5					10					15	
Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu							
			20					25							

<210> 19

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A peptide

<400> 19

Thr	Lys	Tyr	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	Arg	Pro
1				5					10					15	
Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu							
			20					25							

<210> 20

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A peptide

<400> 20

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1				5					10					15	
Ala	Trp	Val	Leu	Val	Gly	Gly	Val	Leu							
			20					25							

<210> 21

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> Mutant Hepatitis C virus NS3/4A peptide

<400> 21

Thr	Lys	Tyr	Met	Thr	Cys	Met	Ser	Ala	Asp	Leu	Glu	Val	Val	Cys	Ser
1				5					10					15	
Thr	Trp	Val	Leu	Val	Gly	Gly	Val	Leu							
			20					25							

<210> 22
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant Hepatitis C virus NS3/4A peptide

<400> 22
Thr Lys Tyr Met Thr Cys Met Ser Ala Asp Leu Glu Val Cys Cys Ser
1 5 10 15
Thr Trp Val Leu Val Gly Gly Val Leu
20 25

<210> 23
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant Hepatitis C virus NS3/4A peptide

<400> 23
Thr Lys Tyr Met Thr Cys Met Ser Ala Asp Leu Glu Val Ser Ser Ser
1 5 10 15
Thr Trp Val Leu Val Gly Gly Val Leu
20 25

<210> 24
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant Hepatitis C virus NS3/4A peptide

<400> 24
Thr Lys Tyr Met Thr Cys Met Ser Ala Asp Ser Ser Ser Ser Cys Ser
1 5 10 15
Thr Trp Val Leu Val Gly Gly Val Leu
20 25

<210> 25
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutant Hepatitis C virus NS3/4A peptide

<400> 25

Thr Lys Tyr Met Thr Cys Met Ser Ala Asp Val Val Val Val Thr Ser
 1 5 10 15
 Thr Trp Val Leu Val Gly Gly Val Leu
 20 25

<210> 26
 <211> 18
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> mutant Hepatitis C virus NS5A/B peptide

<400> 26
 Ser Ser Glu Asp Val Val Cys Cys Ser Met Trp Val Leu Val Gly Gly
 1 5 10 15
 Val Leu

<210> 27
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Hepatitis C virus NS5 peptide

<400> 27
 Ala Ser Glu Asp Val Val Cys Cys Ser Met Ser Tyr Thr Trp Thr Gly
 1 5 10 15

<210> 28
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
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